

Research Project

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When a vegetable is destroyed or damaged, its cells are ripped open. The plant will try to do something in order to protect itself by releasing bitter-tasting chemicals called polyphenols. These chemicals ward off hungry animals that may try to eat the vegetable. An onion takes it a step further, producing a chemical called propanthial s-oxide. This chemical is known as a lachrymatory factor. Once it is released, it quickly evaporates and finds its way into ones eyes. Once it gets into the eyes, it dissolves in the water covering the surface of our eyes to form sulfuric acid. When this happens, it irritates the lacrimal gland. The reason that it is irritating and not so much harmful is because it is such a small amount of acid. There are a few ways that you can prevent crying, from cutting an onion. The first one is to cut off the onions end and peel it, then put it in a bowl of water for fifteenth minuets. This is suppose to help draw out the sulfuric compounds from the onion into the water, preventing tears. Another way to prevent tears, is to refrigerate the onions before chopping. Gases move slower at cooler temperatures. The s-oxide will still be there; it is just moving at a slower speed. The last way that you might be able to prevent an onion from making you cry is to wear protective gear. A pair of glasses should help prevent the gas from getting into your eye.

A brain freeze happens when something cold touches the roof of your mouth. It happens more often in hot weather, and the person consumes something cold too fast. A brain freeze is caused by the cooling of the capillaries of the sinuses, this results in vasoconstriction. After the blood vessels narrow, they are quickly warmed up by something warm such as the air. It is these rapid changes near sensitive nerves located in the palate, that create the sensation of a brain freeze. The sensation of the brain freeze is ultimately caused by a dramatic and sudden increase in blood flow. This increase in blood flow happens in the brain's anterior cerebral artery. It prompts dilation and constriction.. This feeling is interpreted as pain. The rapid change in temperature sends blood to the brain The best way to stop a brain freeze is by drinking warm water, pushing your tongue to the roof of your mouth, which helps to quickly warm the area and/or covering the mouth and nose with the hands and be breathing rapidly to increase warmth. A way to prevent a brain freeze entirely, is to avoid large amounts of cold substances at once.

The majority of recent studies all have found that the reason we yawn, is to cool down the brain. When you get the urge to yawn, it creates a stretch of the jaw. This stretch increases the blood flow in the head, neck, and face. The deep intake of your breath when you yawn, forces the flow of spinal fluid and blood from your brain to go downward. The cool air that you breath in, cools the fluid. It recirculates to the brain, thus cooling it down. The hypothalamus helps to regulate the temperature of the brain and promote yawning if needed. There are a few things that you can do, to try to prevent yawning. Lowering your body temperature makes it less likely for you to yawn. Drinking cool beverages can also cool the body, thus preventing a yawn. A person can also practice their breathing, in order to prevent

yawning. This can be done by breathing through your nose and out of your mouth. This practice allows more oxygen to enter.

A reflex reaction is a quick, unlearned, involuntary response to something dangerous. This is a sequence of events. It includes receptors, sensory neurons, inter-neurons, motor neurons, and effectors. When you go to touch something hot and your hand moves away, you do not have to think about it because it is a reflex that did not involve the brain. When your hand touches something hot, skin receptors quickly send nerve impulses to the spinal cord through sensory neurons. Once in the spinal cord, the impulses are processed and a response is quickly sent back. In the spinal cord the inter-neurons make connections with the sensory neurons and the correct motor neurons. The motor neurons stimulate the muscle to contract. These are also known as the effectors. This all happens so fast, that the response happens before the messages even reach the brain. It has to happen this way so that the response time is quicker. The thinking process of the brain can be time consuming. This type of response will also happen with something cold or something that is causing pain.

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